AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remain(s) under examination in the application is presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or fewer characters; and 2. added matter is shown by underlining.

1-16. (Canceled)

17. (Previously Presented) A method of producing curved cuts in a transparent material, by generating optical breakthroughs at different locations within the material by application of pulsed laser radiation focused into the material beneath a surface of the material, wherein said laser radiation is two-dimensionally deflected in a scan pattern to produce the cut by sequential arrangement of the optical breakthroughs, comprising the steps of:

effecting the two-dimensional deflection in the scan pattern such that the locations of optical breakthroughs are spaced apart, along a curve along which the optical breakthroughs are sequentially arranged, according to a deflection-related angular function which is non-linear and adapted to the curvature of a desired cut such that the locations of adjacent optical breakthroughs along the curve are spaced apart by substantially the same distance within a tolerance.

18. (Previously Presented) The method as claimed in Claim 17, wherein the tolerance is about twenty percent.

19. (Previously Presented) The method as claimed in Claim 17, further comprising:

uniformly pulsing the laser radiation; and

wherein the two dimensional deflection of the laser radiation in both dimensions is effected in a non-linear manner.

20. (Previously Presented) The method as claimed in Claim 19, wherein the deflection is effected about two mutually perpendicular axes, and further comprising the step of guiding the laser radiation along a meander-shaped pattern.

21. (Previously presented) The method as claimed in Claim 17, further comprising deflecting the laser radiation at a lower speed, in one dimension, at the periphery of a region in which the cut is produced, than at the center of the region.

22. (Currently Amended) The method ~~as claimed in Claim 17~~ of producing curved cuts in a transparent material, by generating optical breakthroughs at different locations within the material by application of pulsed laser radiation focused into the material beneath a surface of the material, wherein said laser radiation is two-dimensionally deflected in a scan pattern to produce the cut by sequential arrangement of the optical breakthroughs, comprising the steps of: effecting the two-dimensional deflection in the scan pattern such that the locations of optical breakthroughs are spaced apart, along a curve along which the optical breakthroughs are sequentially arranged, according to a deflection-related angular function which is non-linear and adapted to the curvature of a desired cut such that the locations of adjacent optical breakthroughs along the curve are spaced apart by substantially the same distance within a tolerance, wherein the cut is substantially spherically curved with a radius R, the laser radiation is incident in the material along a main axis of incidence and is biaxially deflected along an x-axis and a y-axis in a plane perpendicular to said main axis of incidence, wherein a step width dx between locations on the curve of adjacent optical breakthroughs is set in the plane in x-direction according to:

$$dx = D \bullet \frac{R1}{\sqrt{R1^2 - x^2}},$$

wherein D designates the distance between centers of the optical breakthroughs and

$$R1 = R \bullet \cos(\arctan \frac{y}{R})$$

23. (Previously Presented) The method as claimed in Claim 17, further comprising altering a pulse rate of the laser, at the periphery of a region in which the cut is produced such that the pulse rate of the laser radiation is higher than the pulse rate at the center of the cut.

24. (Previously Presented) The method as claimed in Claim 17, wherein the two-dimensional deflection is effected according to two deflection functions associated with the two-dimensional deflection, wherein one of said two deflection functions is parameterized with the coordinate to which the other of said two deflection functions is assigned.

25. (Previously Presented) An apparatus for producing curved cuts in a transparent material, said apparatus comprising:

a pulsed laser radiation source which focuses laser radiation into the material and causes optical breakthroughs within the material,

a deflecting unit deflecting the laser radiation two-dimensionally;

a control unit controlling said deflecting unit to form the cut by sequential arrangement of the optical breakthroughs in the material wherein the control unit controls the deflecting unit two-dimensionally in a scan pattern according to a deflection function such that the locations of

optical breakthroughs along a curve on which the optical breakthroughs are sequentially arranged within the transparent material are spaced apart according to a deflection-related angular function, which is non-linear and adapted to the curvature of the cut, such that the locations of optical breakthroughs adjacent along the curve of the cut are spaced apart by a consistent distance within a tolerance.

26. (Previously Presented) The apparatus as claimed in Claim 25, wherein the tolerance is about 20%.

27. (Previously Presented) The apparatus as claimed in Claim 25, wherein the laser radiation source emits uniformly pulsed laser radiation, and the control unit controls the deflecting unit in both dimensions according to a non-linear deflection function.

28. (Previously Presented) The apparatus as claimed in Claim 25, wherein the deflection is effected about two mutually perpendicular axes and wherein the control unit guides the laser radiation along a meander-shaped pattern.

29. (Currently Amended) The apparatus as claimed in Claim 25, wherein the control unit controls the deflecting unit such that deflection in one dimension is effected at a lower speed at a periphery of a region in which the cut is produced, than at a center of the region.

30. (Currently Amended) The apparatus ~~as claimed in Claim 25~~ for producing curved cuts in a transparent material, said apparatus comprising:

a pulsed laser radiation source which focuses laser radiation into the material and causes optical breakthroughs within the material,

a deflecting unit deflecting the laser radiation two-dimensionally;

a control unit controlling said deflecting unit to form the cut by sequential arrangement of the optical breakthroughs in the material wherein the control unit controls the deflecting unit two-dimensionally in a scan pattern according to a deflection function such that the locations of optical breakthroughs along a curve on which the optical breakthroughs are sequentially arranged within the transparent material are spaced apart according to a deflection-related angular function, which is non-linear and adapted to the curvature of the cut, such that the locations of optical breakthroughs adjacent along the curve of the cut are spaced apart by a consistent distance within a tolerance, wherein the control unit controls the deflecting unit such that the cut is substantially spherically curved with a radius R, the laser radiation is incident in the material along a main axis of incidence and the deflecting unit biaxially deflects the laser radiation along an x-axis and a y-axis in a plane perpendicular to said main axis of incidence, wherein the control unit sets a step width dx between locations on the curve of adjacent optical breakthroughs in the plane in x-direction according to:

$$dx = D \bullet \frac{R1}{\sqrt{R1^2 - x^2}},$$

wherein D designates the distance between centers of the optical breakthroughs and

$$R1 = R \bullet \cos(\arctan\frac{y}{R})$$

31. (Previously Presented) The apparatus as claimed in Claim 25, wherein the control unit controls the deflecting unit such that at the periphery of a region in which the cut is produced, the control unit controls a pulse rate of the laser radiation differently from the pulse rate at the center of the cut.

32. (Previously Presented) The apparatus as claimed in Claim 25, wherein the control unit controls the deflecting unit such that at the periphery of a region in which the cut is produced, a pulse rate of the laser radiation such that the pulse rate is higher than the pulse rate at the center of the cut.

33. (Previously Presented) The apparatus as claimed in Claim 25, wherein the control unit controls the deflecting unit such that the two-dimensional deflection is effected according to two deflection functions assigned to the two-dimensional deflection, wherein one of said two deflection functions is parameterized with the coordinate to which the other of said two deflection functions is assigned.